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EXAMINER	
BARTON, JONATHAN A	
ART UNIT	**PAPER NUMBER**
2186	

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/795,996	YAGI, SATOSHI	
	Examiner	Art Unit	
	Jonathan Barton	2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/10/04 & 3/8/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford (US 5,497,457) in view of Tomita (US 2003/0115437).

a. As for claim 1 Ford discloses a control method for a data transfer device that comprises:

i. a data receiver for receiving write data (Col. 1 Lines 13-16 & Col. 3 Lines1-4, Ford does not specifically disclose a host interface, but one is inherently present since the device is intended to be connected to a host device) for a storage device (Fig. 2 Item 510) ; a data control unit (Fig. 2 Item 510) for transferring the write data received by the data receiver to the storage device; and a data storage unit for storing serial data that is stored in a storage area of the storage device (Fig. 2 Item 508), wherein:

ii. the data control unit reads the serial data stored in the storage device in block units and stores this serial data in the data storage unit (Col. 5 Lines 13-14);

iii. when, with respect to the received write data, a block in the storage area of the storage device constituting the write destination of the write data and the block in the storage area of the storage device that is stored in the data storage unit are the same, the data control unit updates data stored in the data storage unit corresponding with the storage-device *data* constituting the write destination of the write data by means of the write data (Col. 2 Lines 38-44). Ford does not specifically point this out, but without *"new data"* there will be no difference in parity and therefore no need to calculate a new parity value. This would have been obvious to one of ordinary skill in the art since this would be a waste of valuable time and resources to calculate a redundant value.

iv. and when, with respect to the received write data, a block in a storage area of the storage device constituting the write destination of the write data and the block in the storage area of the storage device that is stored in the data storage unit are different, the data control unit generates security code based on the serial data stored in the data storage unit, adds the generated security code to the serial data stored in the data storage unit before transferring this serial data to the storage device (Col. 2 Lines 38-44)(*"new data"* will be different than any *old data*), reads the serial data stored in the block in the storage area of the storage device constituting the write destination of the write data before storing this serial data in the data storage unit, and updates the data stored in the data

storage unit corresponding with the storage-device *data* constituting the write destination of the write data by means of the write data (Col. 4 Lines 43-48, Col. 5 Lines 1-3).

v. Ford does not disclose that the storage-drive data is the storage drive storage location. Tomita, however, teaches storing storage locations in a data storage unit (Paragraph 0106). It would have been obvious to one of ordinary skill in the art to combine the storing storage locations of Tomita with Ford's storage array device because having address information stored creates a method to organize or expand the logical addressing scheme. Some method of address tracking is necessary to utilize the logical memory setup in Ford's system, and Tomita's would be an obvious matter of engineering choice.

b. As for claim 2 Ford discloses the control method for the data transfer device wherein the serial write data that is serially received by the data receiver is not necessarily written to successive areas of the block in the order in which this data is received (Col. 5 Lines 26-29).

c. As for claim 3 Ford discloses a data transfer circuit, comprising:

vi. a data receiver for receiving write data (Col. 1 Lines 13-16 & Col. 3 Lines1-4, Ford does not specifically disclose a host interface, but one is inherently present since the device is intended to be connected to a host

device) for a storage device (Fig. 2 Item 510); a data control unit (Fig. 2 Item 510) for transferring the write data received by the data receiver to the storage device; and a data storage unit for storing serial data that is stored in a storage area of the storage device (Fig. 2 Item 508), wherein:

vii. the data control unit reads the serial data stored in the storage device in block units and stores this serial data in the data storage unit (Col. 5 Lines 13-14);

viii. when, with respect to the received write data, a block in the storage area of the storage device constituting the write destination of the write data and the block in the storage area of the storage device that is stored in the data storage unit are the same, the data control unit updates data stored in the data storage unit corresponding with the storage-device *data* constituting the write destination of the write data by means of the write data (Col. 2 Lines 38-44). Ford does not specifically point this out, but without *"new data"* there will be no difference in parity and therefore no need to calculate a new parity value. This would have been obvious to one of ordinary skill in the art since this would be a waste of valuable time and resources to calculate a redundant value.

ix. and when, with respect to the received write data, a block in a storage area of the storage device constituting the write destination of the write data and the block in the storage area of the storage device that is stored in the data storage unit are different, the data control unit generates

security code based on the serial data stored in the data storage unit, adds the generated security code to the serial data stored in the data storage unit before transferring this serial data to the storage device (Col. 2 Lines 38-44)(*"new data"* will be different than any *old data*), reads the serial data stored in the block in the storage area of the storage device constituting the write destination of the write data before storing this serial data in the data storage unit, and updates the data stored in the data storage unit corresponding with the storage-device *data* constituting the write destination of the write data by means of the write data (Col. 4 Lines 43-48, Col. 5 Lines 1-3).

x. Ford does not disclose that the storage-drive data is the storage drive storage location. Tomita, however, teaches storing storage locations in a data storage unit (Paragraph 0106). It would have been obvious to one of ordinary skill in the art to combine the storing storage locations of Tomita with Ford's storage array device because having address information stored creates a method to organize or expand the logical addressing scheme. Some method of address tracking is necessary to utilize the logical memory setup in Ford's system, and Tomita's would be an obvious matter of engineering choice.

d. As for claim 4 Ford discloses the data transfer circuit wherein the serial write data that is serially received by the data receiver is not necessarily written

to successive areas of the block in the order in which this data is received (Col. 5 Lines 26-29).

e. As for claim 5 Ford discloses a *storage* array device, comprising:

xi. a host interface (Col. 1 Lines 13-16 & Col. 3 Lines1-4, Ford does not specifically disclose a host interface, but one is inherently present since the device is intended to be connected to a host device) for receiving write data for a *storage* drive (Fig. 2 Item 520) from an information processing device;

xii. and a data controller that transfers the write data received by the host interface to the *storage* drive (Fig. 2 Item 510), wherein:

xiii. the data controller comprises a data receiver for receiving write data for the *storage* drive from the host interface (Fig. 2 Item 510);

xiv. a data control unit for transferring the write data received by the data receiver to the *storage* drive (Fig. 2 Items 502 & 510);

xv. and a data storage unit for storing serial data stored in the *storage* drive (Fig. 2 Item 508);

xvi. the data control unit reads the serial data stored in the *storage* drive in block units and then stores this serial data in the data storage unit (Col. 5 Lines 13-14);

xvii. when, with respect to the received write data, a block in the storage area of the *storage* drive constituting the write destination of the write data

and the block in the storage area of the *storage* drive that is stored in the data storage unit are the same, the data control unit updates data stored in the data storage unit corresponding with the *storage*-drive *data* constituting the write destination of the write data by means of the write data (Col. 2 Lines 38-44). Ford does not specifically point this out, but without *"new data"* there will be no difference in parity and therefore no need to calculate a new parity value. This would have been obvious to one of ordinary skill in the art since this would be a waste of valuable time and resources to calculate a redundant value.

xviii. and when, with respect to the received write data, a block in a storage area of the *storage* drive constituting the write destination of the write data and the block in the storage area of the *storage* drive that is stored in the data storage unit are different, the data control unit generates security code based on the serial data stored in the data storage unit, adds the generated security code to the serial data stored in the data storage unit before transferring this serial data to the *storage* drive (Col. 2 Lines 38-44)(*"new data"* will be different than any *old data*), reads the serial data stored in the block in the storage area of the *storage* drive constituting the write destination of the write data before storing this serial data in the data storage unit, and updates the data stored in the data storage unit corresponding with the *storage*-drive *data* constituting the

write destination of the write data by means of the write data (Col. 4 Lines 43-48, Col. 5 Lines 1-3).

xix. Ford does not disclose that the storage-drive data is the storage drive storage location. Tomita, however, teaches storing storage locations in a data storage unit (Paragraph 0106). It would have been obvious to one of ordinary skill in the art to combine the storing storage locations of Tomita with Ford's storage array device because having address information stored creates a method to organize or expand the logical addressing scheme. Some method of address tracking is necessary to utilize the logical memory setup in Ford's system, and Tomita's would be an obvious matter of engineering choice.

xx. Ford does not disclose that the storage drive is a disk drive. Tomita, however teaches a disk array device that controls the function of a plurality of disk devices (Fig. 1, Paragraph 0033). It would have been obvious to one of ordinary skill in the art to substitute the disk drives from Tomita for the optical storage devices (or magnetic tape storage devices) from Ford's storage array device because disk drives provide a large storage medium that has a faster write time than the storage mediums in Ford's storage array device.

f. As for claim 6 Ford discloses the *storage* array device wherein the host interface is connected to the information processing device via a network (Col. 3

Lines 44-47); and the serial write data that is serially received by the host interface is not necessarily written to successive areas of the block in the order in which this data is received (Col. 5 Lines 26-29).

g. As for claim 7 Ford discloses a *storage* array device, comprising:

xxi. a host interface for receiving write data (Col. 1 Lines 13-16 & Col. 3 Lines1-4, Ford does not specifically disclose a host interface, but one is inherently present since the device is intended to be connected to a host device) for a *storage* drive from an information processing device (Fig. 2 Item 520);

xxii. a data controller that transfers the write data received by the host interface to the *storage* drive (Fig. 2 Item 510);

xxiii. a processor for exercising overall control (Col. 4 Lines 18-19 – In order to run 'other software' the computer 'Item 500' must have a processor exercising overall system control);

xxiv. and memory for storing data (Fig. 2 Item 508), wherein:

xxv. the processor reads the serial data stored in the *storage* drive in block units and stores this serial data in the memory (Col. 5 Lines 13-14);

xxvi. when, with respect to the received write data, a block in the storage area of the *storage* drive constituting the write destination of the write data and the block in the storage area of the *storage* drive that is stored in the memory are the same, the processor updates data stored in the memory

corresponding with the *storage*-drive *data* constituting the write destination of the write data by means of the write data (Col. 2 Lines 38-44). Ford does not specifically point this out, but without *"new data"* there will be no difference in parity and therefore no need to calculate a new parity value. This would have been obvious to one of ordinary skill in the art since this would be a waste of valuable time and resources to calculate a redundant value;

xxvii. and when, with respect to the received write data, a block in a storage area of the *storage* drive constituting the write destination of the write data and the block in the storage area of the *storage* drive that is stored in the memory are different, the processor generates security code based on the serial data stored in the memory, adds the generated security code to the serial data stored in the memory before transferring this data to the *storage* drive (Col. 2 Lines 38-44)(*"new data"* will be different than any *old data*), reads the serial data stored in the block in the storage area of the *storage* drive constituting the write destination of the write data before storing this serial data in the memory, and updates the data stored in the memory corresponding with the *storage*-drive *data* constituting the write destination of the write data by means of the write data (Col. 4 Lines 43-48, Col. 5 Lines 1-3).

xxviii. Ford does not disclose that the storage-drive data is the storage drive storage location. Tomita, however, teaches storing storage locations

in a data storage unit (Paragraph 0106). It would have been obvious to one of ordinary skill in the art to combine the storing storage locations of Tomita with Ford's storage array device because having address information stored creates a method to organize or expand the logical addressing scheme. Some method of address tracking is necessary to utilize the logical memory setup in Ford's system, and Tomita's would be an obvious matter of engineering choice.

xxix. Ford does not disclose that the storage drive is a disk drive. Tomita, however teaches a disk array device that controls the function of a plurality of disk devices (Fig. 1, Paragraph 0033). It would have been obvious to one of ordinary skill in the art to substitute the disk drives from Tomita for the optical storage devices (or magnetic tape storage devices) from Ford's storage array device because disk drives provide a large storage medium that has a faster write time than the storage mediums in Ford's storage array device.

h. As for claim 8 Ford discloses a *storage* array device, comprising:

xxx. a channel control unit (Col. 1 Lines 13-16 & Col. 3 Lines1-4, Ford does not specifically disclose a host interface, but one is inherently present since the device is intended to be connected to a host device) for receiving write data for a *storage* drive (Fig. 2 Item 520) from an information processing device;

xxxi. a *storage* control unit (Fig. 2 Item 510) that performs processing relating to the writing of data for the *storage* drive,

xxxii. Ford does not disclose a separate data storage unit for storing serial data stored in the storage area of the *storage* drive and cache memory for storing data that is exchanged between the channel control unit and the *storage* control unit. Tomita, however teaches separate data storage unit (Fig. 1 Item 31) and cache unit (Fig. 1 Items 35 & 37) located within the nonvolatile memory (Fig. 1 Item 3). It would have been obvious to one of ordinary skill in the art to combine the memory separation of Tomita with Ford's storage array device because the separation of memory sections allows for simpler memory allocation logic and creates a situation where it is simpler to utilize memory resources more efficiently.

xxxiii. wherein: the data control unit reads the serial data stored in the *storage* drive in block units from the cache memory and then stores this serial data in the data storage unit (Col. 5 Lines 13-14);

xxxiv. the channel control unit comprises a data receiver for receiving the write data (Fig. 2 Item 510);

xxxv. a data control unit for transferring the write data received by the data receiver to the cache memory (Fig. 2 Items 502 & 510);

xxxvi. when, with respect to the received write data, a block in the storage area of the *storage* drive constituting the write destination of the write data and the block in the storage area of the *storage* drive that is stored in the

data storage unit are the same, the data control unit updates data stored in the data storage unit corresponding with the *storage*-drive *data* constituting the write destination of the write data by means of the write data (Col. 2 Lines 38-44). Ford does not specifically point this out, but without *"new data"* there will be no difference in parity and therefore no need to calculate a new parity value. This would have been obvious to one of ordinary skill in the art since this would be a waste of valuable time and resources to calculate a redundant value;

xxxvii. and when, with respect to the received write data, a block in a storage area of the *storage* drive constituting the write destination of the write data and the block in the storage area of the *storage* drive that is stored in the data storage unit are different, the data control unit generates security code based on the serial data stored in the data storage unit, adds the generated security code to the serial data stored in the data storage unit before transferring this serial data to the cache memory (Col. 2 Lines 38-44)(*"new data"* will be different than any *old data*), reads the serial data stored in the block in the storage area of the *storage* drive constituting the write destination of the write data from the cache memory before storing this data in the data storage unit, and updates the data stored in the data storage unit corresponding with the *storage*-drive *data* constituting the write destination of the write data by means of the write data (Col. 4 Lines 43-48, Col. 5 Lines 1-3).

xxxviii. Ford does not disclose that the storage-drive data is the storage drive storage location. Tomita, however, teaches storing storage locations in a data storage unit (Paragraph 0106). It would have been obvious to one of ordinary skill in the art to combine the storing storage locations of Tomita with Ford's storage array device because having address information stored creates a method to organize or expand the logical addressing scheme. Some method of address tracking is necessary to utilize the logical memory setup in Ford's system, and Tomita's would be an obvious matter of engineering choice.

xxxix. Ford does not disclose that the storage drive is a disk drive. Tomita, however teaches a disk array device that controls the function of a plurality of disk devices (Fig. 1, Paragraph 0033). It would have been obvious to one of ordinary skill in the art to substitute the disk drives from Tomita for the optical storage devices (or magnetic tape storage devices) from Ford's storage array device because disk drives provide a large storage medium that has a faster write time than the storage mediums in Ford's storage array device.

i. As for claim 9 Ford discloses the *storage* array device wherein the channel control unit comprises an interface, which is connected to the information processing device via a network (Col. 3 Lines 44-47) and receives the write data; the data receiver receives the write data from the interface; and

the serial write data that is serially received by the interface is not necessarily written to successive areas of the block in the order in which this data is received (Col. 5 Lines 26-29).

j. As for claim 10 Ford discloses a *storage* array device, comprising:

xl. a channel control unit (Col. 1 Lines 13-16 & Col. 3 Lines1-4, Ford does not specifically disclose a host interface, but one is inherently present since the device is intended to be connected to a host device) for receiving write data for a *storage* drive (Fig. 2 Item 520) from an information processing device;

xli. a *storage* control unit that performs processing relating to the writing of data for the *storage* drive (Fig. 2 Item 510);

xlii. Ford does not disclose that the storage-drive data is the storage drive storage location. Tomita, however, teaches storing storage locations in a data storage unit (Paragraph 0106). It would have been obvious to one of ordinary skill in the art to combine the storing storage locations of Tomita with Ford's storage array device because having address information stored creates a method to organize or expand the logical addressing scheme. Some method of address tracking is necessary to utilize the logical memory setup in Ford's system, and Tomita's would be an obvious matter of engineering choice.

xliii. Ford does not disclose a separate a data storage unit for storing serial data stored in the storage area of the *storage* drive and cache memory for storing data that is exchanged between the channel control unit and the *storage* control unit. Tomita, however teaches separate data storage unit (Fig. 1 Item 31) and cache unit (Fig. 1 Items 35 & 37) located within the nonvolatile memory (Fig. 1 Item 3). It would have been obvious to one of ordinary skill in the art to combine the memory separation of Tomita with Ford's storage array device because the separation of memory sections allows for simpler memory allocation logic and creates a situation where it is simpler to utilize memory resources more efficiently.

xliv. wherein: the *storage* control unit comprises a data read unit, which reads the write data from the cache memory, a data control unit, which transfers the write data read by the data read unit to the *storage* drive (a storage control unit (ex SCSI controller inherently has a data read unit and a data control unit contained within, since the role of a storage control unit is to allow communication between a bus (and devices connected to the bus) and the storage device);

xlv. the data control unit reads the serial data stored in the *storage* drive in block units and then stores this serial data in the data storage unit (Col. 5 Lines 13-14);

xlvi. when, with respect to the write data read from the cache memory, a block in the storage area of the *storage* drive constituting the write destination of the write data and the block in the storage area of the *storage* drive that is stored in the data storage unit are the same, the data control unit updates data stored in the data storage unit corresponding with the *storage*-drive *data* constituting the write destination of the write data by means of the write data (Col. 2 Lines 38-44). Ford does not specifically point this out, but without *"new data"* there will be no difference in parity and therefore no need to calculate a new parity value. This would have been obvious to one of ordinary skill in the art since this would be a waste of valuable time and resources to calculate a redundant value;

xlvii. and when, with respect to the write data read from the cache memory, a block in a storage area of the *storage* drive constituting the write destination of the write data and the block in the storage area of the *storage* drive that is stored in the data storage unit are different, the data control unit generates security code based on the serial data stored in the data storage unit, adds the generated security code to the serial data stored in the data storage unit before transferring this serial data to the *storage* drive (Col. 2 Lines 38-44)(*"new data"* will be different than any *old data*), reads the serial data stored in the block in the storage area of the *storage* drive constituting the write destination of the write data before storing this serial data in the data storage unit, and updates the data

stored in the data storage unit corresponding with the *storage*-drive *data* constituting the write destination of the write data by means of the write data (Col. 4 Lines 43-48, Col. 5 Lines 1-3).

xlviii. Ford does not disclose that the storage-drive data is the storage drive storage location. Tomita, however, teaches storing storage locations in a data storage unit (Paragraph 0106). It would have been obvious to one of ordinary skill in the art to combine the storing storage locations of Tomita with Ford's storage array device because having address information stored creates a method to organize or expand the logical addressing scheme. Some method of address tracking is necessary to utilize the logical memory setup in Ford's system, and Tomita's would be an obvious matter of engineering choice.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

k. Katsuragi et al: (US 2004/0210712)

l. Geiner et al: (US 6,842,825)

m. Kern et al: (US 6,463,501)

n. MacLellan et al: (US 6,636,933)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Barton whose telephone number is 571-272-8157. The examiner can normally be reached on Monday - Friday 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jonathan Barton
Examiner
Art Unit 2186

JB

MATTHEW D. ANDERSON
PRIMARY EXAMINER